AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A bone fastener implantation and removal system comprising:

a bone plate including a top surface, a bottom surface and a plurality of fastener holes extending from the top surface to the bottom surface;

a plurality of fasteners receivable within the fastener holes formed in the bone plate; and

a tool including:

a drive shaft having proximal and distal ends, an intermediate portion, an outer sleeve engaging portion and a length;

a handle portion associated with the drive shaft proximal end;

a fastener engaging portion associated with the drive shaft distal end, the fastener engaging portion comprising a first surface configured to axially engage one of the plurality of ~~a~~ fasteners and a second surface configured to rotationally engage the fastener; and

an outer sleeve associated with the drive shaft intermediate portion, the sleeve comprising a proximal end, a distal end and a drive shaft engaging portion, the distal end contacting the top surface of the bone plate to apply a force to the top surface of the bone plate to facilitate removal of the fasteners from the fastener holes;

wherein the outer sleeve engaging portion and the drive shaft engaging portion are configured to coact to allow at least a portion of the drive shaft to translate linearly within the sleeve.

2. (Previously Presented) The system of claim 1, wherein the drive shaft comprises a cannulated fastener driving portion and an inner shaft portion, at least a portion of the inner shaft portion being slidably disposed within the fastener driving portion, the inner shaft portion being configured to axially engage the fastener while the fastener driving portion is configured to rotationally engage the fastener.

3. (Withdrawn) The system of claim 2, wherein the fastener driving portion further comprises:

a driving sleeve having a distal end comprising a fastener driving end and a bore having an inner surface, and

a shaft portion comprising a distal end having a driving sleeve cooperating portion, and a cannulation for receiving the inner shaft portion of the drive shaft,

wherein the distal end of the shaft portion is slidably received within the bore of the driving sleeve, and the bore and the driving sleeve cooperating portion are configured such that rotating the inner sleeve rotates the driving sleeve.

4. (Withdrawn) The system of claim 3, wherein the inner shaft further comprises a radial groove, the shaft portion of the fastener driving portion further comprises a slot, and the driving sleeve further comprises a pin bore, wherein a pin disposed within the pin bore and extending through the slot to engage the radial groove fixes the inner shaft and the driving sleeve axially with respect to each other.

5. (Withdrawn) The system of claim 4, wherein when the inner shaft axially engages the fastener, the driving sleeve also engages the fastener.

6. (Previously Presented) The system of claim 2, wherein the inner shaft portion is tapered and the cannulated fastener driving portion is configured to slidingly receive the tapered inner shaft.

7. (Previously Presented) The system of claim 1, wherein the axial fastener-engagement portion comprises a thread.

8. (Previously Presented) The system of claim 1, wherein the first surface comprises at least one radial member configured to axially engage a recess in a head of the fastener.

9. (Previously Presented) The system of claim 8, wherein the first surface comprises a plurality of radial members, each of which is configured to axially engage corresponding recesses in the fastener head.

10. (Withdrawn) The system of claim 1, wherein the axial fastener-engagement portion grips the fastener about an outside surface of the fastener head.

11. (Previously Presented) The system of claim 1, wherein the sleeve engaging portion and drive shaft engaging portions comprise complementary threads.

12. (Previously Presented) The system of claim 1, further comprising an inner shaft having a fastener engaging surface at one end, the drive shaft further comprising a cannulation configured and sized to accept at least a portion of the inner shaft, wherein when the inner shaft is

disposed within the cannulation the fastener engaging surface extends distally beyond the distal end of the drive shaft.

13. (Previously Presented) The system of claim 1, wherein at least a portion of the sleeve has a roughened outer surface.

14. (Previously Presented) The system of claim 1, the fastener engaging portion further comprising a locking clip expanding portion, the fastener disposed within the fastener holes formed in the plate, the fastener hole further provided with an expandable locking clip configured to engage a portion of the fastener to prevent the fastener from being backed out of the fastener hole, and wherein the locking clip expanding portion is configured to expand the locking clip.

15. (Previously Presented) The system of claim 14, wherein the locking clip expanding portion is configured to expand the locking clip to a dimension greater than an outer diameter of the fastener head.

16. (Previously Presented) The system of claim 14, wherein the locking clip expanding portion is configured to expand the locking clip to a dimension smaller than an outer diameter of the fastener head.

17. (Previously Presented) The system of claim 16, wherein at least a portion of the fastener is configured to expand the locking clip to a dimension substantially equal to the outer diameter of the fastener head when the tool is engaged with the fastener and the tool is operated to remove the fastener from the bone plate.

18. (Canceled)

19. (Canceled)

20. (Withdrawn) The system of claim 1, wherein the sleeve comprises first and second pieces, the first piece configured to threadably engage the sleeve engaging portion of the drive shaft and the second piece comprising an end configured to engage the top surface of the bone plate.

21. (Withdrawn) The system of claim 20, wherein the first and second pieces are rotatable with respect to each other.

22. (Withdrawn) The system of claim 1 wherein the tool further comprises:

at least one radial member,

the plurality of fasteners further comprise a radially deformable head and a threaded body, the head having a circumferential groove for engaging a bone plate locking element, and configured to receive the radial member to axially engage the tool with the fastener, and

at least one fastener hole further comprises a locking element disposed at least partially within the hole and configured to engage at least a portion of the fastener head groove to axially retain the bone screw within the bone screw hole,

wherein when the fastener is retained within the fastener hole by the locking element and the tool is axially engaged with the fastener, an axial removal force applied to the fastener by the tool causes the fastener head to radially deform to thereby disengage the fastener from the locking element.

23. (Withdrawn) The system of claim 22, wherein the fastener head is rendered radially compressible by at least one longitudinal slot disposed in the head.

24. (Withdrawn) The system of claim 22, wherein the fastener head is rendered radially compressible by a hollow portion disposed in the head.

25. (Currently Amended) A bone fastener implantation and removal system comprising:

a bone plate including a top surface, a bottom surface and a plurality of fastener holes extending from the top surface to the bottom surface;

a plurality of fasteners receivable within the fastener holes formed in the bone plate; and

a tool including:

a drive shaft having a fastener engaging end and a sleeve engaging portion, the fastener engaging end comprising a rotational engagement portion and an axial engagement portion;

a sleeve disposed about at least a portion of the drive shaft, the sleeve comprising a proximal end, a distal end and a drive shaft engaging portion, the distal end contacting the top surface of the bone plate to apply a force to the top surface of the bone plate to facilitate removal of one of the plurality of fasteners from the fastener holes;

wherein the sleeve engaging portion and the drive shaft engaging portion comprise complementary threads configured to allow the drive shaft to translate linearly within the sleeve when the drive shaft is rotated relative to the sleeve.

26. (Previously Presented) The system of claim 25, wherein the drive shaft comprises a cannulated fastener driving portion and an inner shaft portion, at least a portion of the inner shaft being

slidably disposed within the driving portion, the inner shaft portion being configured to axially engage one of the fasteners while the driving portion is configured to rotationally engage the fastener.

27. (Previously Presented) The system of claim 26, wherein the inner shaft portion is tapered and the cannulated fastener driving portion is configured to slidingly receive the tapered inner shaft.

28. (Previously Presented) The system of claim 25, the fastener engaging end further comprising a locking clip expanding portion, the fastener engaging end of the drive shaft configured to engage one of the plurality of fasteners disposed within one of the plurality of fastener holes formed in the plate, the plate having an expandable locking clip disposed within the fastener hole, the clip configured to engage a portion of the fastener to prevent the fastener from backing out of the fastener hole, wherein the fastener engaging end is configured to expand the fastener locking clip when the drive shaft engages the fastener.

29. (Currently Amended) The system of claim 28, wherein the locking clip ~~engaging~~ expanding portion is configured to expand the locking clip to a dimension greater than an outer diameter of the fastener head.

30. (Currently Amended) The system of claim 28, wherein the locking clip ~~engaging~~ expanding portion is configured to expand the locking clip to a dimension smaller than an outer diameter of the fastener head.

31. (Previously Presented) The system of claim 30, wherein when the tool is engaged with the fastener and the tool is operated to remove the fastener from the bone plate, an axial removal force applied by the tool is greater than a fastener locking force of the locking clip.

32. (Canceled)

33. (Canceled)

34. (Withdrawn) The system of claim 25, wherein the sleeve comprises first and second pieces, the first piece configured to threadably engage the sleeve engaging portion of the drive shaft and the second piece comprising an end to engage the top surface of the bone plate.

35. (Withdrawn) The system of claim 34, wherein the second piece further comprises an inwardly-extending spring element configured to engage an outer surface of the drive shaft to provisionally retain the second piece at a selected location on the drive shaft.

36. (Withdrawn) The system of claim 35, wherein the first and second pieces are rotatable with respect to each other.

37. (Withdrawn) The system of claim 25, wherein the rotational engagement and axial engagement portions comprise a single screw thread element configured to engage and retain at least a portion of a fastener seated in bone.

38. (Withdrawn) The system of claim 37, wherein when the tool is engaged with the fastener and the tool is rotated to remove the fastener from the bone, the rotation serves to increase engagement of the screw thread element with the fastener.

39. (Canceled)

40. (Canceled)

41. (Canceled)

42. (Canceled)

43. (Currently Amended) A bone fastener implantation and removal system comprising:

a bone plate including a top surface, a bottom surface and a plurality of fastener holes extending from the top surface to the bottom surface;

a plurality of bone fasteners receivable within the fastener holes formed in the bone plate; and

a tool including:

an inner shaft for engaging one of the bone fasteners, an outer shaft for engaging the bone fastener, and an outer sleeve for contacting the top surface of the bone plate and applying a force to the top surface of the bone plate to facilitate removal of one of the plurality of fasteners from the fastener holes;

wherein the inner shaft is configured to axially engage the bone fastener and is slidably disposed within the outer shaft;

wherein the outer shaft is configured to rotationally engage the bone fastener and further comprises an outer sleeve engaging portion; and

wherein the outer sleeve further comprises an outer shaft engaging portion such that the outer shaft may translate linearly within the outer sleeve when the outer sleeve engaging portion rotationally engages the outer shaft engaging portion.

44. (Previously Presented) The system of claim 43, wherein the outer shaft includes a fastener engaging end for rotationally engaging the bone fastener, the bone fastener being disposed within one of the plurality of fastener holes formed in the plate, the plate having an expandable locking clip disposed within the fastener hole, the clip configured to engage a portion of one of the plurality of fasteners to prevent the one of the plurality of fasteners from backing out of the one of the plurality of fastener holes, wherein the fastener engaging end is configured to expand the fastener locking clip when the outer shaft engages the one of the plurality of fasteners.

45. (Previously Presented) The system of claim 43, wherein the outer sleeve engaging portion and outer shaft engaging portion comprise complementary threads.